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Pesticide Fact Sheet Number 1: Aliette

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This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

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b. Identifiers/Open-Ended Terms

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EPA

Pesticide Fact Sheet

Name of Chemical: ALIETTE
Reason for Issuance:
Date Issued: 06/30/83
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1. Description of the chemical

- Generic name: Aluminum Tris (O-ethyl phosphonate)
- Common name: Fosetyl-Al
- Trade name: Aliette
- EPA Shaughnessy code: 123301
- Chemical Abstracts Service (CAS) number: 39148-24-8
- Year of initial registration: 1983
- Pesticide type: fungicide
- Chemical family: Aluminum ester of alkyl phosphonates
- U.S. and foreign producers: Rhone-Poulenc, Incorporated

2. Use patterns and formulations

- Application sites: Greenhouses, field grown ornamentals, and pineapple seed pieces
- Types of formulations: Wettable power
- Types and Methods of applications: Dip and ground spray apparatus
- Usual carriers: water

3. Science Findings

Summary science statement: There are no extensive data gaps that exist for Fosetyl-Al. The toxicity from oral, dermal, and inhalation route of exposure is low. The chemical has been demonstrated to be a stong eye irritant. The chemical is considered to be an oncogen. Available data indicate that Fosetyl-Al has no teratogenic potential nor is it a mutagen.

Fosetyl-Al is degradated rapidly in both moist and dry soils under aerobic conditions, with half-lives 1 to 1/2 half hours and 20 minutes respectively. The chemical is not expected to contaminate groundwater.

Fosetyl-Al has a low toxicity for both fish and wildlife, and the chemical and its use patterns presents no problems to endangered species.

Chemical characteristics:

- Fosetyl-Al is a fine white, odorless powder. It is stable to heat, melts with decomposition at temperatures greater than 200° C. The chemical does not present any unusual handling hazards.

Toxicological characteristics:

- Fosetyl-Al is considered a strong eye irritant (Toxicity Category I).
- It demonstrates low toxicity from oral, dermal and inhalation routes of exposure (Toxicity Category IV, III, & III respectively).
- The chemical is not considered to be a skin irritant.
- Toxicology studies on Fosetyl-Al are as follows:

  - Oral LD_{50} in rats: 5.4 gm/kg body weight
  - Dermal LD_{50} in rats: >3 gm/kg
  - Inhalation LC_{50} in rats: >1.73 mg/l
  - Eye Irritation in rabbits: 2/6 animals revealed pannus of the cornea at 7 days and continued to show irritating effects at 21 days
  - Dermal Irritation in rabbits: not an irritant
  - Skin Sensitization in guinea pigs: Not a skin sensitizer
  - Teratology in rabbits: No observeable effect level (NOEL) > than 500 mg/kg/day
  - Teratology in rats: NOEL > than 1000 mg/kg/day
  - Multigeneration Reproduction study in rats: The reproduction NOEL is 6000 parts per million (PPM); the lowest effect level (LEL) is 12,000 ppm (crystalline deposits in urogenital system, lower overall weight gains in the F_{2b} generation, lower litter and mean pup weights in late lactation)
  - Chronic feeding/oncogenicity in rats: The chronic feeding/ oncogenicity NOEL is 8000 ppm; the LEL is 3000/4000 ppm (calculi and mineralization in 14/79 males in urogenital)
  - Chronic feeding in dogs: The chronic feeding NOEL is 10,000 ppm; the LEL is 20,000 ppm (presence of spermatocytic and or spermatidic giant cells within the semineferous tubules).
  - Oncogenicity in mice: No oncogenic effects were induced at any dose level under conditions of this test (highest dose tested 20,000/30,000 ppm).
  - Mutagenicity: Fosetyl-Al did not show any mutagenic activity in gene mutation, chromosomal aberration, or micronucleus tests.

Environmental Characteristics:

- The degradation of Fosetyl-Al in soil under aerobic conditions is quite rapid and is due to microbial action. Half-life is 1 to 1/2 hours in loamy sand, silt loam, and clay loam soils, and 20 minutes in sandy loam soil. The degradation proceeds through the hydrolysis of the ethyl ester bond resulting in the formation of phosphorous acid and ethanol. The ethanol is further degraded into carbon dioxide. The

phosphorous acid formed will form precipitates with calcium, aluminum, or iron in the soil or with aluminum from the Fosetyl-Al.
- Under field conditions, the chemical is not expected to leach.
- Bioaccumulation does not appear to be a factor.
- The use patterns are not expected to result in direct contamination hazards (via spray drift) to humans, livestock, or wildlife outside the application sites.

Ecological characteristics

- Avian oral LD_{50}: >8000 mg/kg (extremely low toxicity)
- Avian dietary LC_{50}: >20,000 ppm
- Fish LC_{50}: >150 mg/l (low toxicity)
- Aquatic invertebrate LC_{50}: 189 ppm
- The use patterns of the chemical do not present any problem to endangered species.

Tolerance assessment

- A tolerance of 0.1 ppm is required for pineapples and pineapple forage. Data developed with C^{14} labeled Fosety-Al indicate that residues of Fosetyl-Al or its metabolites could remain in harvested pineapples at or below the level of analytical method detection.

4. Summary of Regulatory Position and Rationale

- General Use
- No use, formulation, or geographical restrictions are required
- Because of oncogenicity potential of this compound a risk assessment was calculated for all uses involved. The risk calculations are based on overestimates of any actual risk exposure. The calculated risks, although low, are likely to be overestimates.
- Dietary risk for pineapples is $0.27\text{-}2.40 \times 10^{-8}$
- Oncogenic risk exposure ranged from $1.0\text{-}9.0 \times 10^{-9}$ to applicators to $0.7\text{-}6.0 \times 10^{-6}$ for pineapple planters wearing gloves.
- For the pineapple use, the following statement is required to reduce the exposure to seed piece planters: "Note to User: "Gloves impermeable to Fosetyl-Al must be worn during the handling and planting of pineapple crowns (seed pieces)."

5. Summary of Major Data Gaps:

- Exposure monitoring study for pineapple seed piece treaters.

6. Contact person at EPA

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